



# Superfund Risk Assessment for Portland Harbor

## Portland Harbor Community Advisory Group Meeting – February 11, 2009

*As a part of the Portland Harbor Remedial Investigation and Feasibility Study (RI/FS), a human health risk assessment will be completed. The human health risk assessment is a tool we use in deciding how to clean up sites. This summary provides a brief review of how a human health risk assessment is done. We hope that this information will make it easier for you to provide your input on the risk assessment. In addition, it may help you understand the risks the site may pose to you and your family. Your feedback on risk can help improve cleanup.*

### A brief review of Superfund risk assessment:



We study health risks based on what people do and are likely to do at Portland Harbor. Our goal is to protect everyone who could come in contact with chemicals from the site, including those people that would be expected to have the highest risks.

We use a four-part process to estimate the chance that contact with chemicals from a site will harm people now or in the future. This process gives us numbers that show how great (or small) the risks may be. It also points to who is at risk, what is causing the risk, and how sure we are about the numbers.

### Data Collection and Evaluation

The first step of a risk assessment is Data Collection and Evaluation. We find out what has happened at and around the site and where chemicals may have been left. At Portland Harbor, the Lower Willamette Group (LWG) collected fish and shellfish that people eat, such as bass, carp, crappie, and bullhead. The LWG also collected samples of beach sediment, river sediment, groundwater, and surface water. From these samples, we look at what chemicals are there and how much. You can help EPA find out more about where chemicals might be and how they got there by contacting us if you have seen someone dumping something or know about the site history.

**You can help us find out where chemicals are located and what people do around Portland Harbor**

### Exposure Assessment

In the next step, the Exposure Assessment, the data collected is used to find out how people might be exposed to each chemical. People must come in contact with the chemicals to be at risk. The amount of exposure depends a lot on how much of each chemical is there, who might be exposed, and how they are exposed. For instance, a child might play with polluted sediment or an angler might eat contaminated fish.

**People must come in contact with chemicals from the site to be at risk**

In Portland Harbor, people can be exposed to chemicals by eating contaminated fish and shellfish. Fish and shellfish can become contaminated with chemicals that are in sediment, surface water and groundwater. Exposure to chemicals can also occur in surface water, beach sediment and sediment in the river through a variety of activities. One example might be dock workers who have unintentionally consumed river water and beach sediment while working at

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facilities along the river. Transients who live along the river on a temporary basis or recreationists who use the beaches may also be exposed. Boaters and divers may be exposed through unintended consumption of river water and sediments. We will also look at whether people can be exposed to chemicals by skin absorption of chemicals in surface water, beach sediment and sediment in the river.

You can tell us about these activities, which helps us identify everyone who could be exposed. Your assistance helps us estimate the highest exposure anyone is likely to receive from the site.

## **Toxicity Assessment**

Toxicity Assessment is how we learn about which illnesses or other health effects may be caused by exposure to chemicals. It also says at what dose harmful health effects will occur. This is the same as saying how much of each chemical it takes to cause harm. The higher the dose, the more likely a chemical will cause harm.

## **Risk Characterization**

Risk Characterization is the final step that sums up information about which chemicals pose the risks and what the health risks are. It also says how sure we are about the results. Since some uncertainty about risk estimates is unavoidable, we build in a large margin of safety to prevent underestimating the risks. These safeguards are intended to protect the exposed public.

The human health risk characterization for the Portland Harbor site will calculate possible increases in health risks from consuming chemicals in fish and shellfish and from exposure to beach sediment, river sediment, and river water. We will evaluate both cancer risk and non-cancer health effects, such as damage to organs, effects on reproduction or on fetal and child development. Those chemicals whose calculated health risks are above EPA and ODEQ acceptable levels will be identified as chemicals of concern.

Preliminary calculations for Portland Harbor show that polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and chlorinated dioxins and furans are chemicals of concern for exposure through unintentional ingestion or absorption through the skin to some sediment areas within the river; PAHs are chemicals of concern for beach sediment for these exposures. For fish and shellfish, PCBs and chlorinated dioxins and furans are the chemicals of concern that contribute the most to health risks and pesticides such as DDT and DDE, also contribute to the risks. PAHs also contribute to the risk for eating shellfish. These preliminary calculations also show that the highest risks are from eating fish and shellfish from the Portland Harbor site.

## **What Comes Next?**

The risk assessment will be used to identify preliminary remediation goals and then develop a cleanup plan that will make the site safer for current and future use.

## **For more information about Human Health Risk Assessment for Portland Harbor:**

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